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☐ **41:** Growth Factors 1995;12(2):99-109 Related Articles, Nucleotide, OMIM, Protein

Growth/differentiation factor-10: a new member of the transfc growth factor-beta superfamily related to bone morphogenetic

Cunningham NS, Jenkins NA, Gilbert DJ, Copeland NG, Reddi AH, L

Department of Orthopaedic Surgery, Johns Hopkins University School of M Baltimore, Maryland 21205, USA.

We have identified a new member of the transforming growth factor-beta (superfamily, growth/differentiation factor-10 (GDF-10), which is highly rel morphogenetic protein-3 (BMP-3). The nucleotide sequence of GDF-10 enc predicted protein of 476 amino acids with a molecular weight of approxima The GDF-10 polypeptide contains a potential signal sequence for secretion, RXXR proteolytic processing site, and a carboxy-terminal domain with con homology to other known members of the TGF-beta superfamily. In the ma terminal domain GDF-10 is more homologous to BMP-3 (83% amino acid identity) than to any other previously identified TGF-beta family member. (shows significant homology to BMP-3 (approximately 30% amino acid seq identity) in the pro- region of the molecule. Based on these sequence compa 10 and BMP-3 define a new subgroup within the larger TGF-beta superfam Northern analysis, GDF-10 mRNA was detected primarily in murine uterus tissue, and brain and to a lesser extent in liver and spleen. In addition, GDF was present in both neonatal and adult bone samples, with higher levels bei calvaria than in long bone. These results suggest that GDF10 may play mul regulating cell differentiation events, including those involved in skeletal m Gdf10 was mapped to the proximal region of mouse chromosome 14 close known to contain a spontaneous recessive mutation that is associated with a defect.

PMID: 8679252 [PubMed - indexed for MEDLINE]

☐ **42:** Nature 1994 Apr 14;368(6472):639-43 Related Articles, Nucleotide, OMIM

Comment in:

- Nature. 1994 Apr 14;368(6472):587-8

Limb alterations in brachypodism mice due to mutations in a r member of the TGF beta-superfamily.

Storm EE, Huynh TV, Copeland NG, Jenkins NA, Kingsley DM, Lee S

Department of Developmental Biology, Beckman Center, Stanford Univers Medicine, California 94305-5427.

The mutation brachypodism (bp) alters the length and number of bones in tl mice but spares the axial skeleton. It illustrates the importance of specific g controlling the morphogenesis of individual skeletal elements in the tetrapo now report the isolation of three new members of the transforming growth f (TGF-beta) superfamily (growth/differentiation factors (GDF) 5,6 and 7) an mapping, expression patterns and sequencing that mutations in Gdf5 are res skeletal alterations in bp mice. GDF5 and the closely related GDF6 and GD new subgroup of factors related to known bone- and cartilage-inducing mol bone morphogenetic proteins (BMPs). Studies of Bmp5 mutations in short shown that at least one other BMP gene is also required for normal skeletal The highly specific skeletal alterations in bp and short ear mice suggest that members of the BMP family control the formation of different morphologic the mammalian skeleton.

PMID: 8145850 [PubMed - indexed for MEDLINE]

☐ **43:** Prog Growth Factor Res 1994;5(1):99-118 Related Articles, Genome, Nucleotid

Erratum in:

- Prog Growth Factor Res 1994;5(2):following 261

Evolution of the transforming growth factor-beta superfamily.

Burt DW, Law AS.

Department of Cellular and Molecular Biology, AFRC Roslin Institute, Mic

Transforming growth factor beta 1 (TGF-beta 1) is the prototype of an incre complex superfamily of growth and differentiation factors. To date, a total beta-like sequences have been published, probably representing 23 distinct sequences were obtained from mammalian, avian, amphibian and insect spe emphasising the ancient nature of the TGF-beta superfamily peptides. This summarises current hypotheses concerning the evolutionary history of this superfamily, based on the molecular phylogeny of the published sequences. of the deduced amino acid sequences leads to the definition of five main gr the superfamily (TGF-beta, Bone Morphogenetic Proteins [BMP], Anti-Mu

Hormone [AMH], Inhibin alpha [INH alpha] and GDF-9) and six subgroup BMPs (60A, Decapentaplegic [dpp], Vg1, BMP-3, Inhibin beta [INH beta A nodal). This classification predicts possible phylogenetic and functional rel among these proteins.

PMID: 8199356 [PubMed - indexed for MEDLINE]

☐ **44:** Mol Endocrinol 1990 Jul;4(7):1034-40 Related Articles, Nucleotide, OMIM

Identification of a novel member (GDF-1) of the transforming factor-beta superfamily.

Lee SJ.

Carnegie Institution of Washington, Department of Embryology, Baltimore 21210.

A cDNA clone encoding a new member (designated GDF-1) of the transfor factor-beta (TGF beta) superfamily was isolated from a library prepared fro mouse embryos. The nucleotide sequence of GDF-1 predicts a protein of 35 acids with a mol wt of 38,600. The sequence contains a pair of arginine resi positions 236-237, which is likely to represent a site for proteolytic process terminus following the presumed dibasic cleavage site shows significant ho the known members of the TGF beta superfamily, matching the other famil all of the invariant positions, including the seven cysteine residues with thei characteristic spacing. GDF-1 is most homologous to Xenopus Vg-1 (52%) likely to be the murine homolog of Vg-1. In vitro translation experiments w with GDF-1 being a secreted glycoprotein. Genomic Southern analysis indi GDF-1 may be highly conserved across species. These results suggest that (most likely an extracellular factor mediating cell differentiation events duri development.

PMID: 1704486 [PubMed - indexed for MEDLINE]
